

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

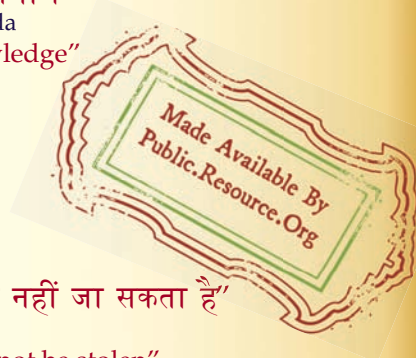
IS 15625 (2005): Plain bearings - Lubrication holes, grooves and pockets - Dimensions, types designation and their application to bearing bushes [PGD 13: Bearing]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE



भारतीय मानक

सादे बेयरिंग — स्नेहन छिद्र, खाँचे और पॉकेट — आयाम,
टाईप, अभिनाम और बेयरिंग बुश के लिए इनके अनुप्रयोग

Indian Standard

**PLAIN BEARINGS — LUBRICATION HOLES,
GROOVES AND POCKETS — DIMENSIONS, TYPES,
DESIGNATION AND THEIR APPLICATION TO
BEARING BUSHES**

ICS 21.100.10

© BIS 2005

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

NATIONAL FOREWORD

This Indian Standard which is identical with ISO 12128 : 2001 'Plain bearings — Lubrication holes, grooves and pockets — Dimensions, types, designation and their application to bearing bushes' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendations of the Bearings Sectional Committee and approval of the Medical Instruments, General and Production Engineering Division Council.

The text of the ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to the following International Standard for which Indian Standard also exists. The corresponding Indian Standard which is to be substituted in its place is listed below along with its degree of equivalence for the edition indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 2768-1 : 1989 General tolerances — Part 1 : Tolerances for linear and angular dimensions without individual tolerance indications	IS 2102 (Part 1):1993 General tolerances : Part 1 Tolerances for linear and angular dimensions without individual tolerance indications (<i>third revision</i>)	Identical

The concerned Technical Committee responsible for the preparation of this standard has reviewed the provisions of the following International Standard and has decided that it is acceptable for use in conjunction with this standard:

<i>International Standard</i>	<i>Title</i>
ISO 4379 : 1993	Plain bearings — Copper alloy bushes

Indian Standard

**PLAIN BEARINGS — LUBRICATION HOLES,
GROOVES AND POCKETS — DIMENSIONS, TYPES,
DESIGNATION AND THEIR APPLICATION TO
BEARING BUSHES**

1 Scope

This International Standard specifies dimensions for lubrication holes, grooves and pockets for bearing bushes. These dimensions can be entered, e.g. on drawings, using the designation examples. Their use depends in particular on the specific operating conditions.

In addition, it enables the user to assign the different types of lubricant feed and distribution to plain bearing bushes made of copper alloys, thermosetting plastics, thermoplastics or of artificial carbon.

NOTE Different types of lubricant feed and distribution for plain bearing bushes made of sintered metals have not been specified due to the fact that these bushes are soaked with lubricant. Plain bearing bushes made of artificial carbon are not lubricated with oil or grease.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 2768-1:1989, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*.

ISO 4379:1993, *Plain bearings — Copper alloy bushes*.

3 Dimensions, types and designation

3.1 General

The dimensions of the lubrication holes, grooves and pockets are related to the bearing wall thickness s . The given diameter d_1 shall only serve as an auxiliary dimension.

All dimensions are given in millimetres.

3.2 Lubrication holes

3.2.1 Dimensions and types

See Figure 1 and Table 1.

Lubrication holes may be provided in conjunction with lubrication grooves and pockets, or, if the requirement to be met by a lubrication point is less stringent, even without these.

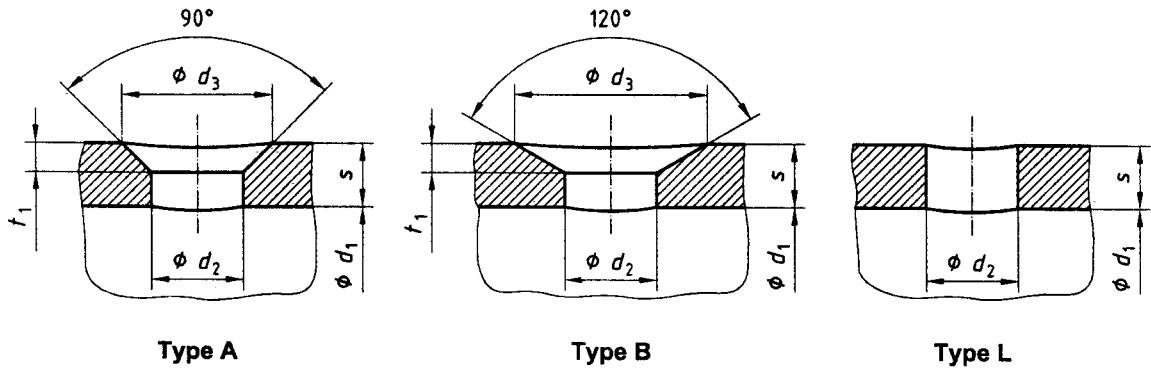


Figure 1 — Lubrication holes

Table 1 — Dimensions of the lubrication holes

d_2		2,5	3	4	5	6	8	10	12
t_1		1	1,5	2	2,5	3	4	5	6
$d_3 \approx$	Type A	4,5	6	8	10	12	16	20	24
	Type B	6	8,2	10,8	13,6	16,2	21,8	27,2	32,6
s	$>$	—	2	2,5	3	4	5	7,5	10
	$\leq$	2	2,5	3	4	5	7,5	10	—
d_1	nom.	$d_1 \leq 30$		$30 < d_1 > \leq 100$			$d_1 > 100$		

3.2.2 Designation

EXAMPLE A lubrication hole of type A with before diameter $d_2 = 3$ mm, is designated as follows:

Lubrication hole ISO 12128 - A3

3.3 Lubrication grooves

3.3.1 Dimensions and types

See Figures 2 and 3 and Tables 2 and 3.

Lubrication grooves are mainly provided on plain bearings. Types C, D and E are also used in conjunction with type H (circumferential groove), predominantly on plain bearings made of non-ferrous metal, steel, cast iron or plastics, types F and G predominantly on plain bearings made from artificial carbon.

Type J is a narrow blended groove principally for use with grease lubrication. In order to facilitate machining and avoid burrs, all sharp corners may have a small break edge or radius.

NOTE In order to facilitate manufacture, the dimension of the bearing thickness remaining at the base of the groove may be specified on the drawing as the control dimension.

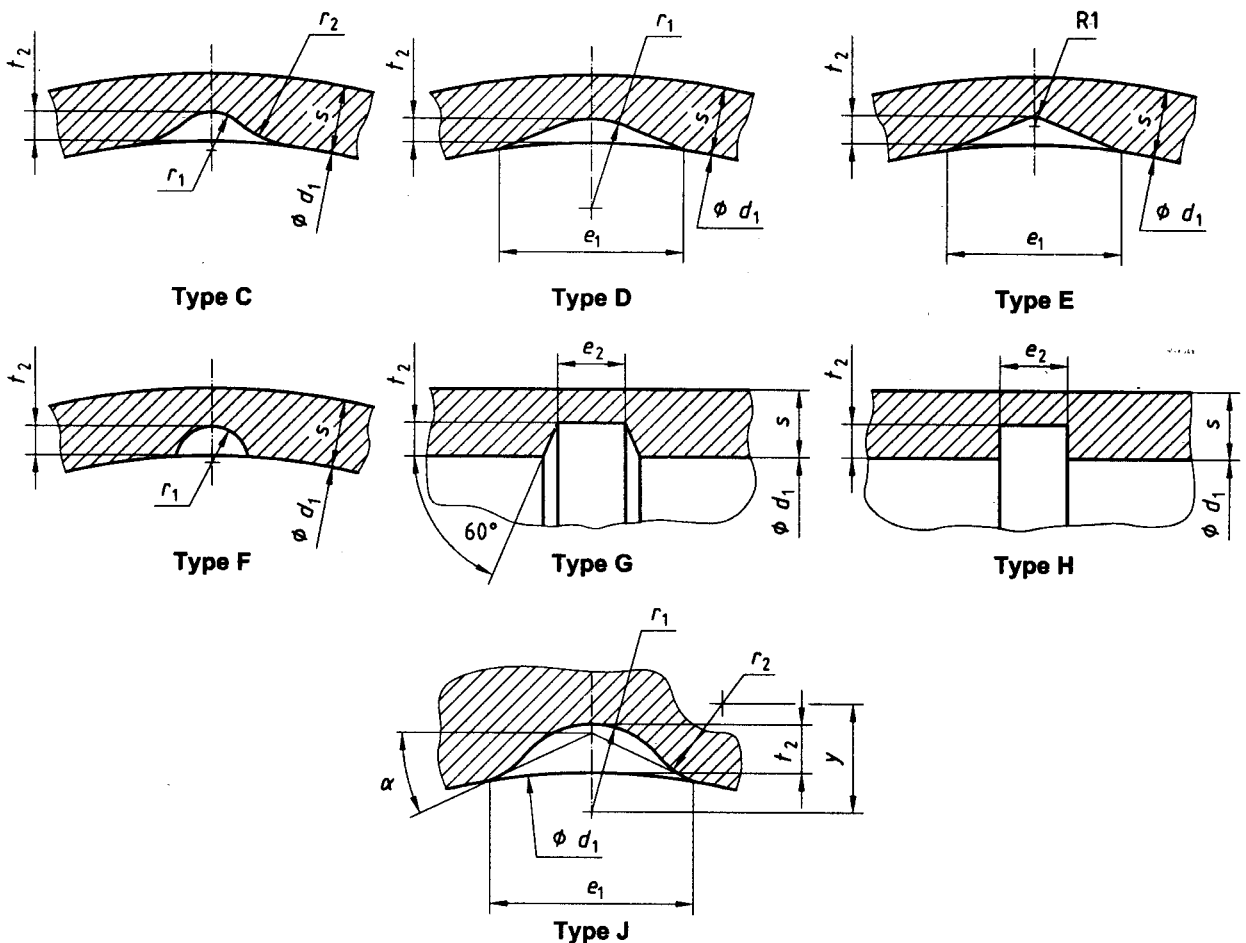
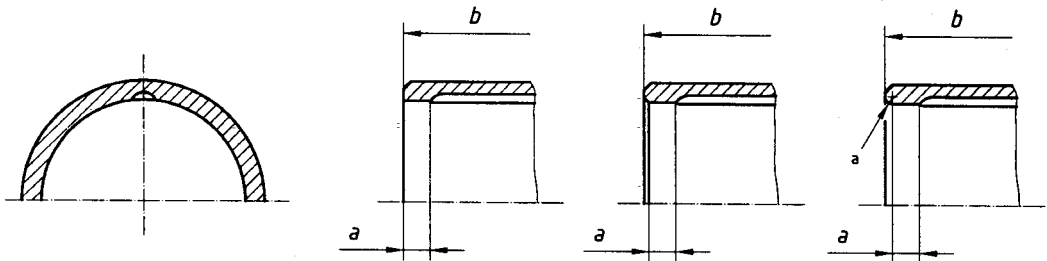


Figure 2 — Lubrication grooves

Table 2 — Dimensions of lubrication grooves

t_2 Type C to J	e_1 Type		e_2 Type		r_1 Type				r_2 Type		y Type	α Type	s		d_1 Type	
	D, E	J	G	H	C	D	F	J	C	J	J	J	>	≤	C to H	J
0,4	3	3	1,2	3	1,5	1,5	1	1	1,5	1	1,5	28°	—	1	$d_1 \leq 30$	16
0,6	4	4	1,6	3	1,5	1,5	1	1,5	2	1,5	2,1	25°	1	1,5		20
0,8	5	5	1,8	3	1,5	2,5	1	1,5	3	1,5	2,2	25°	1,5	2		30
1	8	6	2	4	2	4	1,5	2	4,5	2	2,8	22°	2	2,5		40
1,2	10,5	6	2,5	5	2,5	6	2	2	6	2	2,6	22°	2,5	3	$d_1 \leq 100$	40
1,6	14	7	3,5	6	3	8	3	2,5	9	2,5	3	20°	3	4		50
2	19	8	4,5	8	4	12	4	2,5	12	2,5	26	20°	4	5		60
2,5	28	8	7,5	10	5	20	5	3	15	3	2,8	20°	5	7,5	$d_1 > 100$	70
3,2	38	—	11	12	7	28	7	—	21	—	—	—	7,5	10		—
4	49	—	14	15	9	35	9	—	27	—	—	—	10	—		—



^a Rounded

Figure 3 — Lubrication grooves with closed ends

Table 3 — Dimensions for distance a

b	nom.	$15 \leq b \leq 30$	$30 < b \leq 60$	$60 < b \leq 100$	$b > 100$
a		3	4	6	10

3.3.2 Designation

EXAMPLE A lubrication groove of type D with groove depth $t_2 = 0,8$ mm, is designated as follows:

Lubrication groove ISO 12128 - D0,8

3.4 Lubrication pockets

3.4.1 Dimensions and types

See Figure 4 and Table 4.

Lubrication pockets shall in general be provided in cases where larger lubrication spaces are required. Type K shall predominantly be used for plain slideways with a to-and-fro movement in a straight line.

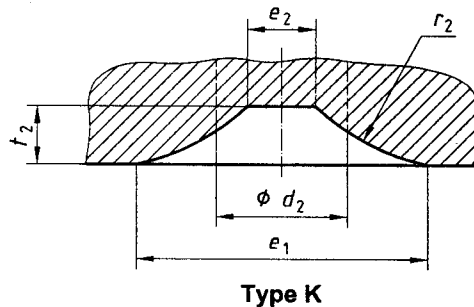


Figure 4 — Lubrication pocket

Table 4 — Dimensions of the lubrication pockets

t_2	d_2	e_1	e_2	r_2
1,6	6	8	1,8	6,5
2,5	8	15	2,8	14
4	10	24	4,5	20
6	12	35	6,3	30

3.4.2 Designation

EXAMPLE A lubrication pocket of type K with pocket depth $t_2 = 2,5$ mm, is designated as follows:

Lubrication pocket ISO 12128 - K2,5

3.5 Design

Permissible deviations without tolerance indications shall be in accordance with tolerance class "c" specified in ISO 2768-1. The edges shall be chamfered to 0,5 max. or rounded. Sharp-edged transitions to the sliding surface shall be avoided.

Lubrication holes, grooves and pockets should not be arranged in the stressed zone of the plain bearing. With the exception of plain bearings made from artificial carbon, lubrication grooves and pockets shall in general not be made over the whole length of the bearing. The shape of the groove or pocket runout shall be left to the manufacturer's discretion.

NOTE When producing lubrication grooves and pockets in plain bearings from tough and hard materials, chatter marks may occur on the bottom of the groove, which do not impair the operation of the plain bearing. Lubrication holes, grooves and pockets are not provided on plain bearings made from sintered metal, since these are soaked with lubricant.

4 Lubrication holes, grooves and pockets on bearing bushes (see Table 5)

The dimensions and types of the lubrication holes, grooves and pockets on bearing bushes in accordance with this International Standard are given in 3.2 to 3.4.

Examples for the designation of bearing bushes without lubrication holes, grooves and pockets are to be taken from the relevant standards on dimensions.

The symbol x represents, in the ISO designation, the required distance from the insert side, unless $x = b/2$; the symbol h represents the required dimension for the groove pitch, which is from $0,1b$ up to $1b$.

If two lubrication holes and grooves are provided, they shall be located at 180° to each other, if there are three at 120° and four at 90° to each other.

Only one type and one bush form are illustrated and designated, each with freely chosen values for the dimensions x and h .

5 Examples of the designation of bushes with lubrication holes and/or grooves

Bush C $20 \times 24 \times 20$ Y made of CuSn8P accordance with ISO 4379, with two lubrication holes of type L (2L) corresponding to bush A of this International Standard, off-centre, with distance $x = 6$ mm is designated as follows.

Bush ISO 4379 - C 20 x 24 x 20 Y - A2L6 - CuSn8P

Same bush but with two longitudinal grooves of type D (2D) corresponding to bush type C of this International Standard is designated as follows.

Bush ISO 4379 - C 20 x 24 x 20 Y - A2L62D - CuSn8P

Bush C $20 \times 24 \times 20$ Y made of CuSn8P accordance with ISO 4379, with three longitudinal grooves of type D (3D) corresponding to bush type C of this International Standard, in conjunction with one circumferential groove of type H (1H) corresponding to bush of type E of this International Standard, off-centre, with distance $x = 6$ mm is designated as follows.

Bush ISO 4379 - C 20 x 24 x 20 Y - C3DE1H6 - CuSn8P

Table 5 — Types of bearing bush

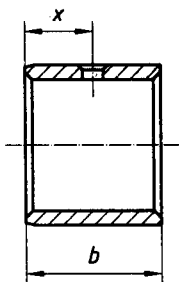
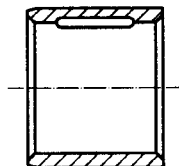
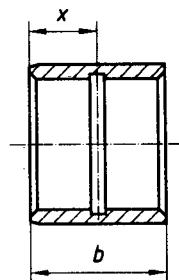
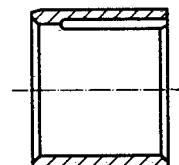
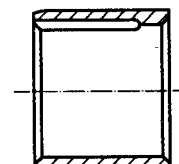
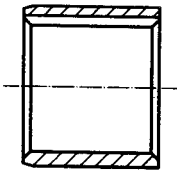
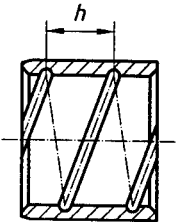
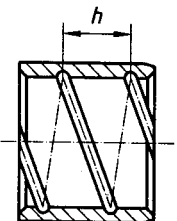
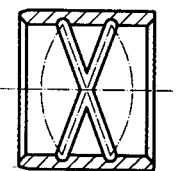
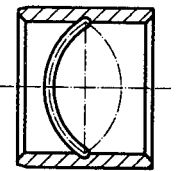
Bush type	Type accordance with clause 3	Lubrication holes and grooves		Bearing bush material
		Type and application		
A	A B L	Lubrication hole, in-centre or off-centre		Copper alloys Thermosetting plastics Thermoplastics
C	C D E J	Longitudinal groove closed at both ends		Copper alloys Thermosetting plastics Thermoplastics
E	G H	Circumferential groove, in-centre or off-centre		Copper alloys Thermosetting plastics Thermoplastics Artificial carbon
G	C D E J	Longitudinal groove open at the end opposite the insert side		Copper alloys Thermosetting plastics Thermoplastics
H	C D E J	Longitudinal groove open at the end towards the insert side		Copper alloys Thermosetting plastics Thermoplastics

Table 5 — Types of bearing bush (continued)

Bush type	Lubrication holes and grooves		Type and application	Bearing bush material
	Type accordance with clause 3			
J	C D E F J	Longitudinal groove open at both ends		Copper alloys Artificial carbon
K	C F J	Helical groove, right-hand thread		Copper alloys Artificial carbon
L	C F J	Helical groove, left-hand thread		Copper alloys Artificial carbon
M	C J	Octagonal groove		Copper alloys Thermosetting plastics Thermoplastics
N	C J	Oval groove		Copper alloys Thermosetting plastics Thermoplastics

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc: No. PG 13/BP 36/31 (0354).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002

Telephones: 2323 0131, 2323 3375, 2323 9402

website : www.bis.org.in

Regional Offices:

Telephones

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110002

$$\begin{cases} 2323 \ 7617 \\ 2323 \ 3841 \end{cases}$$

Eastern : 1/14 C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi
KOLKATA 700054

$$\begin{cases} 2337\ 8499, 2337\ 8561 \\ 2337\ 8626, 2337\ 9120 \end{cases}$$

Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022

$$\begin{cases} 260\,3843 \\ 260\,9285 \end{cases}$$

Southern : C.I.T. Campus, IV Cross Road, CHENNAI 600113

$$\begin{cases} 2254 \ 1216, 2254 \ 1442 \\ 2254 \ 2519, 2254 \ 2315 \end{cases}$$

Western : Manakalaya, E9 MIDC, Marol, Andheri (East)
MUMBAI 400093

{ 2832 9295, 2832 7858
2832 7891, 2832 7892

Branches : AHMEDABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR. LUCKNOW. NAGPUR. NALAGARH. PATNA. PUNE. RAJKOT. THIRUVANANTHAPURAM. VISAKHAPATNAM.